

WHAT IS CLAIMED IS:

1. An isolated polynucleotide sequence comprising SEQ ID NO:1 or SEQ ID NO:3.
2. The isolated polynucleotide of Claim 1, which encodes a fertility associated antigen.
- 5 3. A vector comprising the isolated polynucleotide of Claim 1.
4. The vector of Claim 3, wherein said vector is a prokaryotic expression vector, wherein the vector comprises a bacterial T7 promoter.
5. A host cell comprising the isolated polynucleotide of Claim 1.
6. The host cell of Claim 5, which is a bacterial cell, a yeast cell or a mammalian cell.
7. An isolated polynucleotide, which hybridizes under stringent conditions to the isolated polynucleotide of Claim 1 and encodes a fertility associated antigen
8. An isolated polypeptide comprising the amino acid sequence of SEQ ID NO:2.
9. A method of producing a fertility associated antigen comprising introducing an isolated polynucleotide encoding fertility associated antigen into a host cell; culturing said host cell under conditions suitable for expression of fertility associated antigen; and isolating the fertility associated antigen produced.
10. The method of Claim 9, wherein said isolated polynucleotide comprises the nucleotide sequence of SEQ ID NO:1 or SEQ ID NO:3.
11. The method of Claim 9, wherein said isolating comprises purifying said fertility associated antigen.
- 20 12. The method of Claim 11, wherein said purifying comprises chromatography and/or affinity separation.
13. The method of Claim 9, wherein said host cell is a bacterial cell.
14. The method of Claim 9, wherein said host cell is yeast cell.
- 25 15. The method of Claim 9, wherein said host cell is a mammalian cell.
16. The method of Claim 9, wherein said isolated polynucleotide comprises SEQ ID NO:1 or a polynucleotide sequence with greater than 70% identity to SEQ ID NO: 1.
17. A method of increasing the stability of the plasma membrane plus acrosome of a sperm cell, and/or other portions of a sperm cell comprising mixing said sperm cells in a suspension together with the fertility associated antigen of Claim 8.

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18. The method of Claim 17, wherein said sperm cell is a mammalian sperm cell.
19. The method of Claim 18, wherein said mammalian sperm cell is a sperm cell from the mammal selected from the group consisting of buffalo, cow, horse, mice, pig, sheep, and human.
20. The method of Claim 17 wherein said sperm cell is an avian sperm cell.
21. The method of Claim 20, wherein said avian sperm cell is a sperm cell from a turkey or a chicken.
22. The method of Claim 17, wherein said mixing is performed *in vitro*.
23. The method of Claim 17, wherein said mixing is performed *in vivo*.
24. A method of increasing the stability of the plasma membrane plus acrosome of a sperm cell, and/or other portions of a sperm cell comprising mixing said sperm cells in a suspension together with FAA produced by the method of Claim 9.
25. The method of Claim 24, wherein said sperm cell is a mammalian sperm cell.
26. The method of Claim 25, wherein said mammalian sperm cell is a sperm cell from the mammal selected from the group consisting of buffalo, cow, horse, mice, pig, sheep, and human.
27. The method of Claim 24, wherein said sperm cell is an avian sperm cell.
28. The method of Claim 27, wherein said avian sperm cell is a sperm cell from a turkey or a chicken.
29. The method of Claim 24, wherein said mixing is performed *in vitro*.
30. The method of Claim 24, wherein said mixing is performed *in vivo*.
31. A method of increasing the fertility of sperm from a mammal, comprising adding the fertility associated antigen of Claim 8 to a suspension of said sperm cells after said sperm cells are recovered from said mammal.
32. The method of Claim 31, wherein said sperm cells are recovered after sperm cell ejaculation.
33. The method of Claim 31, wherein said adding the fertility associated antigen to the suspension of sperm cells is prior to preservation or prior to the administration of said sperm cells to a mammal in artificial insemination.

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34. The method of Claim 31, wherein said mammal is selected from the group consisting of buffalo, cow, horse, mice, pig, sheep, and human.

35. A method of increasing the fertility of sperm from a mammal, comprising adding the fertility associated antigen produced by the method of Claim 9 to a suspension of said sperm cells after said sperm cells are recovered from said mammal.

36. The method of Claim 35, wherein said sperm cells are recovered after sperm cell ejaculation.

37. The method of Claim 35, wherein said adding the fertility associated antigen to the suspension of sperm cells is prior to preservation or prior to the administration of said sperm cells to a mammal in artificial insemination.

38. The method of Claim 35, wherein said mammal is selected from the group consisting of buffalo, cow, horse, mice, pig, sheep, and human.

39. A method of increasing the fertility of sperm from an avian, comprising adding the fertility associated antigen of Claim 8 to a suspension of said sperm cells after said sperm cells are recovered from said avian.

40. The method of Claim 39, wherein said sperm cells are recovered after sperm cell ejaculation.

41. The method of Claim 39, wherein said adding the fertility associated antigen to the suspension of sperm cells is prior to preservation or prior to the administration of said sperm cells to a mammal in artificial insemination.

20 42. The method of Claim 39, wherein said avian is a chicken or turkey.

43. A method of increasing the fertility of sperm from an avian, comprising adding the fertility associated antigen produced by the method of Claim 9 to a suspension of said sperm cells after said sperm cells are recovered from said avian.

25 44. The method of Claim 43, wherein said sperm cells are recovered after sperm cell ejaculation.

45. The method of Claim 43, wherein said adding the fertility associated antigen to the suspension of sperm cells is prior to preservation or prior to the administration of said sperm cells to a mammal in artificial insemination.

30 46. The method of Claim 43, wherein said avian is a chicken or turkey.

47. A method of increasing the fertility of sperm from a mammal, comprising placing the fertility associated antigen of Claim 8 into a female's reproductive tract prior to deposition of said sperm cells into said female's reproductive tract by copulation or artificial insemination.

5       48. The method of Claim 47, wherein said mammal is selected from the group consisting of buffalo, cattle, horses, humans, mice, pigs, and sheep.

49. A method of increasing the fertility of sperm from a mammal, comprising placing the fertility associated antigen produced by the method of Claim 9 into a female's reproductive tract prior to deposition of said sperm cells into said female's reproductive tract by copulation or artificial insemination.

50. The method of Claim 49, wherein said mammal is selected from the group consisting of buffalo, cattle, horse, mice, sheep, pig and human.

51. A method of increasing the fertility of a male mammal comprising administering the fertility associated antigen of Claim 8 into said male mammal, wherein said administering comprises injecting said FAA into said male mammal's reproductive tract.

52. The method of Claim 51, wherein said mammal is selected from the group consisting of buffalo, cattle, horse, mice, sheep, pig and human.

53. A method of increasing the fertility of a male mammal comprising administering the fertility associated antigen produced by the method of Claim 9 into said male mammal, wherein said administering comprises injecting said FAA into said male mammal's reproductive tract.

54. The method of Claim 53, wherein said mammal is selected from the group consisting of buffalo, cattle, horse, mice, sheep, pig and human.

55. A transgenic non-human mammal or avian comprising and expressing the isolated polynucleotide of Claim 1.

25       56. The transgenic non-human mammal of Claim 22, which is a cow, goat, pig or sheep.

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